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Society of Technical Writers

Association of Technical Writers and Editors

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The Association of Technical Writers and Editors

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THE JOURNAL OF THE ASSOCIATION OF TECHNICAL WRITERS AND EDITORS

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TWE - STW National Convention

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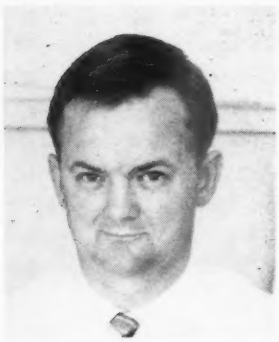

By JOHN J. RAFFONE

You'd better brush up on your Greek alphabet; at least the first five letters of it, alpha, beta, gamma, delta, and epsilon. Because that's what you'll need to get the most out of your three-day national convention this year devoted to the theme, Frontiers of Technical Writing.

So broad has the profession of technical writing and editing grown—and your own interests, so varied—that your zealous program committee had to call on the Greek alphabet to systematize things. No matter what you are—writer, editor, illustrator, educator, journalist, production or information specialist—you'll find sessions of lasting interest on this year's program. You've just got to learn a little Greek, that's all.

The morning will be devoted to registration—expected to set a substantially new high this year, incidentally—followed by welcome addresses from the joint societies' presidents, a keynote address by an outstanding speaker and personality, and all topped off by a get-acquainted luncheon that you won't want to miss.

Then in the afternoon you get your first taste of the Greek alphabet. You can choose between the **alpha** session, "Pioneering Improved Communication Techniques," or the **beta** session, "Modern Illustration and Production." The only problem here is to decide on which one you'll attend: both are excellent, each having an impressive array of speakers distinguished in the field of technical communication.

Having learned the first two letters of the Greek alphabet, you won't have any difficulty Thursday morning—provided you've recuperated from your first night on the "big town."

Again, there are only two sessions. The **alpha** session explores the theme, "Current Trends in Handbooks, Manuals, and Other Instructional Literature." Here you'll have the opportunity to observe firsthand some of the new techniques in preparing technical manuals, as well as learning just how effective instructional literature is among the people who must use it. Commencing at the same hour, the **beta** session of the morning's program deals with the more-specialized counterpart of technical manuals, the technical report. Its theme: "Today's Technical Reports and Other Informational Literature."

Following this morning session on Thursday, you'll be able to unbend at the convention's gala luncheon. Besides having another opportunity to informally exchange notes with others in the profession, you'll hear an outstanding speaker.

Thursday afternoon you begin your postgraduate course in Greek. If you don't already, you'll need to know three more letters of the alphabet—gamma, delta, and epsilon. Workshop sessions, at which speakers present actual case histories, start concurrently at 2 o'clock.

The **alpha** group takes up the theme, "How the Technical Writer Can Increase the Effectiveness of Scientists and Engineers." Concurrently, the **beta** session discusses, "Illustrations;" the **gamma** session, "Technical Manuals: the New Weapon Concept;" **delta** has for its theme the technical writer's all-important management and coordinating function, "Administration;" and **epsilon** introduces a relatively new but growing field for technical writers under the heading, "Communicating Technical Information to Laymen."

Now, if you are still with us, we'll go into the program for the final day of the convention, Friday, November 15. Do you begin to see the herculean effort of your program committee?

Apparently so that there won't be a mass exodus for the airlines and trains on the convention's last day, your program committee planned a series of meetings for Friday that you just can't afford to miss.

The morning **alpha** session deals with, "New Concepts in Training and Professional Development." Four first-rate speakers—three from education and one from industry—give you freely of their knowledge in this vital field. Running parallel to this session is **beta's**, "Newer Frontiers in Technical Communications," with another line-up of four outstanding speakers. If you seek variety and knowledge of more specialized areas in technical communication, you'll get it here.

Starting promptly at 2 o'clock in the afternoon, no less than **five** workshop sessions begin. No matter what your field of interest, you are bound to find something of great interest and value. So if you're planning to leave the convention early, we urge you to reconsider.

Once again, the **alpha** workshop gets off on the educational theme, "Training Technical Writers," with a group of distinguished panel members moderated by an educator who pioneered in the training of technical writers on-campus. For those interested in the systematic preservation, retrieval, and utilization of technical literature, the **beta** workshop presents, "The Technical Editor and Documentation."

The **gamma** workshop delves into the field of technical journalism with the subject, "Preparation of Technical Articles for Magazines and Professional Journals." If you want to know why some articles get published, why others don't, this is where you'll find out. All panel members and speakers are editors of magazines or journals.

Another specialized field, "Technical Motion Pictures," occupies the **delta** workshop session. This is another area of great growth and opportunity for the technical writer, particularly in an era where visual techniques of communication are becoming so widespread.

As all technical writers and editors know, the marriage of words and graphic illustration is essential to any successful publication. Hence, the **epsilon** session presents a workshop on, "Production Methods: The Graphic Arts." Whether you're in the production end of publications or not, you'll find the knowledge gained at this session essential.

And so, this is the program concocted for you by planners of the 1957 TWE-STW convention. It's quite a program, and we know you'll leave a much-more-informed person. In exchange for your travel, time, and expense, you become a more proficient technical writer or editor, and a great asset to your profession.

What's more, you'll have learned a little Greek!

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Profile of a Technical Writer

The characteristics of that nebulous professional, the technical writer, come into somewhat sharper focus as the result of a recent survey conducted by the Boston Chapter of STW.

The technical writer is usually a college graduate but seldom possesses an advanced degree. There is a 2 to 1 chance that he attended a liberal arts college, majoring in technical subjects. He did not study to be a technical writer. About half of the technical writers surveyed began work in engineering or scientific fields, a quarter of them were in fields allied to writing, and the remainder came from a wide variety of jobs.

He reads from 6 to 20 books a year and news magazines such as Time, Life, and Newsweek. He seldom subscribes to a technical magazine.

His salary as a beginner with limited technical experience, is between $4,000 and $5,000; if he has extensive technical experience, $5,000 to $7,000; his maximum pay may vary from $8,000 to $12,000. As a technical editor the range is also between $8,000 and $12,000; as a publications director he may reach $15,000.

What is the probable sex of this person? Boston forgot to ask.

How To Use An Outside Technical Writing Service

By ROBERT L. CRAIG

McGraw-Hill Technical Writing Service
New York, N. Y.

Several hundred firms across the nation offer services of one sort or another for the preparation of publications. To the person responsible for publication preparation, good outside writing service can often be a big help and sometimes can offer distinct advantages on literature projects. But an outside service is no sure-fire cure-all for every publications problem. If the use of an outside service is to be effective and problems avoided, two important, but often neglected, factors must be present.

1. The firm selected must be capable of performing the specific task.

2. A sound mutual understanding of the job and good procedures must be established **before** starting.

Definition of Technical Writing Services

First, the various types of outside assistance being discussed should be defined. Briefly, there are these general kinds of end products:

Instruction Books — How to use and maintain equipment (also parts lists).

Reference Books—Usually collection of data for engineers or designers.

Procedure Manuals—Guides for establishing consistent procedures. (e. g., how to operate a stock control system.)

Training Manuals—Manuals, aids, etc., usually for job training.

Special Studies—Compilations of special information, feasibility studies, literature researching, etc.

Sales Materials—Catalogs, brochures, etc.

Almost all of the functional publications produced by business, industry, and government can be classified in one of these general types.

Technical Writing Service Functions

Most outside firms will provide one or a combination of the following functions:

Planning—Some firms will analyze complex publications projects and prepare a detailed project plan including outlines, cost estimates, and appropriate style standards.

Writing — Includes gathering and interpreting source information, developing outlines, rough drafts and final drafts.

Editing—The meaning of this term varies widely and must be defined in each instance. For example, copy editing is a mechanical check for conformance to editorial standards as compared with technical editing of content which must be done by a technical authority.

Illustrating—Most firms offer a full range of illustrating skills from simple line work to full-color advertising art.

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Typography and Printing — Frequently writing firms have their own cold composition equipment (IBM proportional spacing typewriters, Varitypers, Justowriters, etc), for typography for offset printing. Although very few writing firms have their own equipment for hot-metal composition or their own printing equipment, most of them handle this work as part of their service.

Type of Service

Services are offered by some firms either in the form of personnel to work on the client's premises at the client's direction or on a package project basis done in the writing firm's shop under its own direction. Some writing firms, specializing in the first method, act as recruiting agencies to supply needed manpower to a client for peak load situations. The client has the advantage of in-plant liaison and no obligation to the employee for continuing employment. To attract people for this type of work, relatively high salaries are offered which the client's own employees sometimes resent. This, along with unclear lines of supervision, can lead to personnel problems.

On the other hand, when a package project is done in the writing firm's own shop, the writing firm assumes a responsibility for accomplishing the project and relieves the client of problems arising out of supervision of temporary employees and of providing extra facilities. The client also gains the advantage of the outside firm's work load flexibility.

Advantages of Using Outside Service

Concrete benefits to be gained by using an outside service include:

Workload Flexibility—Rarely is a publication department's work load constant. A very logical solution to the varying work load problem is to staff for minimum or average and use outside help for peaks.

Special Skills—Producing high quality publications requires many diverse skills, some of which are

(Continued on page 6)

WHAT GOOD IS A SUMMARY?

How does the quantity and accuracy of information which you can get and retain by reading a summary compare with that which you can get and retain by reading the original report or paper? A significant study of this question, made by P. C. Wason of University College, London, was discussed at a meeting of the Presentation of Technical Information Group at London in March of this year.

Care was taken to select original material that was well written and summaries that fairly presented the salient points of the originals. The tests were made on 60 undergraduates of the University of London. Each student had as long a time as he desired to read one original and one summary (not on the same topic). The students were then asked to write down the salient points of what they had read. Scoring was done by a group of experts on the basis of the extent to which, in their judgment, the students had correctly recalled the salient points.

In the 120 observations made in the test there were 20 serious errors where the students missed the point of the material. Of these errors, 15 derived from summaries and 5 from originals.

More significant, the number of salient points recalled from originals was consistently greater than the number recalled from summaries, the average being 7.8 for the former and 4.4 for the latter.

In explanation of the findings Mr. Wason maintains that the non-essential points in the original served to increase understanding of the salient points and, hence, the likelihood that these salient points would be remembered. A summary should not be considered to be a substitute for the original, he believes, but rather as a key or reference to be used in conjunction with the original.

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(Continued from page 5)

needed in rather small amounts, far short of justifying full-time specialists. A comprehensive writing service can supply these talents on an as-needed basis. Indexing is an example. Good indexing requires special talent but most publications groups cannot use an experienced indexer on a full-time basis.

Cost Isolation—Buying outside writing service, in some cases, tends to show actual costs more clearly by eliminating hidden internal costs. Unless a firm uses a cost accounting system that separates **all** publication costs, it is difficult to determine a true total cost. A true evaluation will consider all indirect (overhead) costs, materials (prints, etc.), and all other incidental labor cost for work on the job.

Surprisingly, some people tend to compare internal direct salary costs with an outside group's price quotation that represents a total cost (salaries, materials, and overhead expenses). Such comparisons are obviously quite misleading.

Schedule—Frequently, an outside service can provide time schedule advantages by virtue of larger staffs, specialized talents, and greater flexibility. Also, an important factor usually present with outside assistance is the desire to get the job done and paid for just as soon as possible. Normally this motivation factor is not as evident in internal publications work and, therefore, there is a greater tendency for schedules to slip. The use of outside assistance as a supplement to internal effort is an ideal solution to the problem of meeting schedules.

Quality—Any self-respecting outside service that intends to be in business for the long haul certainly does its best to produce high quality work. Because it is selling its work directly, probably to another publications group, it considers the quality consideration to be predominent.

Another quality factor is the broadening effect of an outside service's experience with their other clients. An internal group normally tends to become more narrow in its approach simply due to lack of diverse influences. Outside firms can bring the benefits of their broader experience to the individual job.

Disadvantages

Of course, problems do arise in dealing with outside writing groups. The first, perhaps, is education. Usually, an outside firm cannot be as familiar with the subject matter as is the internal group.

Also, the job experience does not accrue directly to the benefit of the internal group. By using the same outside group on a repetitive basis this disadvantage can be minimized.

Liaison and source information gathering is normally more difficult for outside firms. This can be particularly true on classified military work or on jobs involving proprietary information.

Certain types of jobs where unusually close contact or liaison is essential are sometimes not very suitable for outside groups. Annual reports are an example. They are usually done on a very tight schedule, subject to repeated and close scrutiny by top executives and are frequently the object of last-minute changes.

Selling

Technical writing service as a product is highly intangible. Consequently it is difficult to evaluate the quality of service offered and conversely it is easy to be misled by an over-zealous salesman. One basic rule to follow, though, is to beware of the salesman with the "magic formula" approach. If he offers the "we'll solve all your problems, just leave everything to us" kind of service, it's time to check a little further on capability.

In interviews with salesmen, get the facts; current and past projects, client references, type of personnel available (are they presently on the staff?), and what quality control procedures are used.

Bidding

No bidder can make a good proposal without good information. In competitive situations the range of prices quoted invariably is an inverse function of the quality of information supplied for bids. Close bids result from good information. A wide price spread means that bidders do not all have the same concept of the project; a result of inadequate information. Effort in defining the job for bidders will pay off in better bids and a better job!

Project Definition

Before any technical writing project can be started, or, for that matter, before it can be priced, it must be defined. Usually not all factors are known at the outset, but knowing what is unknown is important, too. Assumptions can then be made and defined.

While each project has its own peculiar factors, there are some common elements to consider that apply to virtually all situations:

Source Material—This can be called the starting point and takes into account available subject matter, sources of additional subject matter, the outline, specifications and previous similar material. It is important to assess the completeness, pertinency, and accuracy of the source material and also to make clear just what has to be done to it. Must it be supplemented, evaluated, used directly, completely reorganized, revised slightly, rewritten entirely, or what? The effort required here is a major factor in pricing and scheduling.

End Product—This might be construed as where the project ends. What is the form, quantity and

purpose of the publication? It can also be called the project objective.

Schedules—Not only for when the job is to be started and finished, but all of the process time factors such as review points, phase completion dates, and source information availability dates.

Procedures—This is a job plan of detailing what is going to be done to accomplish the work. It establishes the procedures for obtaining and evaluating subject matter, liaison, review and approval, progress reporting and other operating plans.

Quantities—While most publications projects cannot be defined precisely beforehand in quantitative terms of pages, illustrations, hours, etc., it is essential that realistic estimates be made for purposes of project control and pricing. Experienced estimators can make reasonable estimates and then any variations from estimated quantities become meaningful for cost and project control purposes.

Bid Evaluation

When considering a bid from an outside firm, first consider the proposal itself. Does it describe what is going to be done and how? It should tell a complete story and portray a thorough knowledge of the project. Evaluation of technical writing bids is difficult because of the intangible nature of the work. And too, lowest price is not necessarily the best buy. Possibly, even the highest price might be the best buy. The price must be considered in terms of the product offered.

Types of Contract

The type of contract negotiated for work with an outside writing group should be consistent with the type of assistance being provided. In essence, a contract represents an agreement as to what is to be done and the cost obligation that will be incurred. A good contract is an invaluable aid to accomplishing the task while a poor one can present huge operating obstacles. A contract should define the scope of the work, the buyer's responsibilities, the seller's responsibilities, and all other pertinent considerations. Both parties should take into account all of the "fine print" especially in government contracts and sub-contracts.

The contract may be in the form of a formal contract, a purchase order, memorandum of agreement, basic agreement with supplemental instructions, or simply a letter covering all points.

Types of Pricing

The most frequently used kinds of pricing for technical writing contracts are:

Fixed Price—Is usually the most convenient to negotiate and administer providing the fixed price is for a fixed amount of effort. It should not be used when the work cannot be defined within reasonably close limits.

Time and Materials—Means that labor effort is billed at fixed rates for the actual time spent on the project and materials are billed at the seller's actual cost. For a publication project, it is normal to establish a set of hourly rates for various labor categories such as writer, editor, typist, retoucher, inker, etc. Time and Materials is commonly used where amount of effort required cannot be determined in advance and for instances when there is a continuing flow of work of repetitive nature.

Cost-Plus-Fixed-Fee—Frequently used in government research and development areas where the desired end product can be fairly well established but the effort required to achieve it cannot. The seller, in effect, agrees to exert his best effort to accomplish the task within the budget established. Instead of a normal profit factor, the seller gets a fixed fee and thus has an incentive to do the work for the minimum expenditure to realize the greatest percentage of return on his investment.

Operating Factors

All of the matters discussed to this point have been things to consider before work starts. All of these things will contribute to a better job but the successful use of outside service still requires a practical, working arrangement for doing the actual work.

A **thorough understanding** must be reached by both parties as to project requirements and procedures.

A **single primary liaison** point must be established for each group to avoid confusion and split responsibility.

Information flow is vital to an outside writing group. They will not be able to do an effective writing job unless all information is made available to them.

An **initial meeting** should be held for each project to review all project factors.

An **activity schedule** should be prepared by the outside writing group and a copy provided to the client.

Progress reports on a regularly scheduled basis should be supplied to the client by the outside group.

A **record** of important meetings, phone calls, and other discussion should be made with copies to all concerned.

Changes in the job from the original scope should not be undertaken without specific authorization.

Review of material should be specific and constructive. Broad, general comments are not very helpful to someone faced with the task of making revisions. A good reviewer will make direct, to-the-point comments and suggestions.

The best rule of all for using outside service is a simple, common-sense one: select a competent, reliable firm, establish a thorough mutual understanding of the job, and expect to pay a fair price for quality work.

A FRONT DOOR TO A NEW PROFESSION

By S. P. OLMSTED

Nearly all technical writers have entered their profession by the back door. They started out to be engineers, scientists, teachers, journalists — even poets and novelists. For technical writing is a new profession, and there have been almost no front entrances to it. Few have entered the profession by design and with planned academic training. Even the idea of academic training for technical writers is fairly new, and the curricula which are being developed are definitely experimental.

My job in this article is to describe one of these curricula—the graduate program which has been in operation at Rensselaer Polytechnic Institute in Troy, New York for the past three and a half years. The RPI program is, of course, only one way of training technical writers. In a field as broad as technical writing a great many different approaches and different emphases are needed. **Technical writing** is a two-word term. It is possible to emphasize either the first word or the second—with distinctly different consequences. It is also possible to emphasize both as we are doing at RPI. The most effective technical writer, we believe, is a person with a basic technical background **plus** intensive training as writer and editor. It is certainly possible to provide both kinds of training in a single curriculum. At present, however, we are attempting a somewhat simpler job: we are superimposing training in writing, editing, and related skills and bodies of knowledge on an undergraduate education in science and technology. A degree in a technical field is a prerequisite for admission to the RPI graduate program in technical writing.

The RPI program was first offered in September, 1953. The first graduate received a Master of Science degree with a major in technical writing in February, 1955. The program is, therefore, new. It is also still small. If it provides a front door to the field, it is still a very small front door.

As it has developed the program is marked by two characteristics, breadth and balance. We are interested in producing specialists in technical writing, but we hope these specialists will not be too narrowly specialized. In such a rapidly developing profession, it is difficult to visualize the precise job of the writer two years, five years, or ten years from now. If the writer is to be adequately prepared for the demands which may be made upon him, he must have a picture of his profession as a whole and con-

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siderable practical versatility. Occasionally we get letters from people who ask: "Do you have a specific course in instruction books?" "Do you have a course in the technical report?" "Do you have a course in the scientific feature article?" The answer to all these questions is the same. We do take up instruction books, technical reports, and scientific feature articles, as well as a dozen other fairly distinct types, in several different courses; but we consider these types in relation to each other, and we do not conduct specific courses in each. We are interested in the whole field rather than in any specialized part of it, and we are interested in producing graduates who can analyze communication problems and work out solutions to them. The courses which we offer, therefore, bear such general titles as **Technical Exposition, Writing and Editing, Mechanics of Publishing, Law for Writers, Scientific Masterpieces, Non-verbal Methods of Presentation, Writing for Publication,** and **Writing in Industry.** Course titles are often misleading, but these happen to be reasonably descriptive, and they indicate the breadth of the RPI program.

We are also interested in maintaining at least two kinds of balance within the curriculum. The first kind of balance has already been mentioned: that between technical knowledge and the various skills which may be included under the general term **writing.** Not only must candidates for a degree already possess a degree in a scientific "subject-matter" field; they must also carry on some technical work at the graduate level. This work may amount to a graduate minor in the student's undergraduate specialty consisting of twelve hours of technical work out of a total program of thirty hours. Or the student, if he chooses, may diversify his technical background. Some students have elected courses in management and in psychology to prepare themselves better either for supervisory jobs or for an understanding of their own industrial roles.

The second kind of balance is between the theoretical and the practical. We could not offer a useful program if we did not have as an objective the development of skillful writers and editors, men and women who can turn out a competent piece of work. But we would not be doing justice to technical writing as a profession if we did not also recognize the existence of a respectable body of theory. In our own time we are witnessing a revolution in communications which is possibly more important than even the revolution in power. Accompanying and supporting this revolution are rapidly developing and converging theories ranging from information theory to semantics. We believe that students who have earned a Master's degree in technical writing should know something about these theories and should be able to apply this knowledge. A "skill-program" may be useful, but it can hardly be dignified as graduate education, nor can it provide a gateway to a profession.

The man who has a degree in science or engineering is already prepared to enter a useful and rewarding profession. We are interested in providing a graduate program which will make him broader and more useful rather than narrower and less useful, and we are concerned that he should keep the professional status to which he is already entitled. Every major profession has followed the same line of educational development; it has begun with apprentice training, and as it has achieved professional status it has turned to academic training as a recognized front door for those who would enter its ranks. The Rensselaer program provides, we hope, one very modest front entrance to a maturing profession.

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Are We Losing Possession?

By BENJAMIN KELLER
China Lake, California

The author—engineer was writing a report, laboring to tell his readers the best way to determine the angular accuracy of a radar. He wrote:

"The set angular accuracy is then readily found by comparing . . . "

He meant:

"The set's angular accuracy is . . . "

This is no random or isolated slip. It is an instance of a form of error that is becoming so frequent as to constitute a trend.

Is this trend of interest to technical editors? Should we indeed consider it an error? If an error, is it a harmless one, or perhaps the kind that eventually enriches the language? Perhaps we also wish to speculate how such usage could come into existence. Let us consider it not in isolation, but as one aspect of the whole picture of technical literature, and let us see to what conclusions our considerations lead us.

How Does This Concern Technical Editors?

The more carelessly the technical editors of the English-speaking world edit, the further the technical man's medium of communication will deviate from main-stream English, and the more unintelligible will technical literature become. The drift away from main-stream English appears to be accelerating, as indeed we might expect: first, because growth of inertia follows the growth in bulk of technical writing; second, because as editors' ears grow callous to nonstandard usage, the editors fail more and more often to note and correct such usage. As professional editors and writers, we must decide now and then whether to drift with the tide or stand against it. But before we decide, we need a little perspective.

Where Did Our Problem Originate?

In the usage found in general literature, there is some balance between **qualities**, **predications**, and **things** (represented verbally by adjectives, verbs, and nouns). Technical literature, however, emphasizes **things** overwhelmingly, uses **qualities** sparingly, and avoids **predications** energetically. Consequently, the semantics of technical language is peculiar, and the peculiarities are reflected in the language of technical people. Many critics have noted the technical writer's tendency to lump an abstraction (a **thing**) with a colorless verb rather than employ the proper verb.

For example, the technical writer says:

The launching of the aircraft was accomplished less than one second prior to the explosion.

He means, of course:

The aircraft had been launched less than a second when the gasoline drum exploded.

But because he thinks primarily of **things**, whether concrete or abstract, he first conceives "Launching," then "Explosion." Then he writes a sentence around these nouns.

Another linguistic result[1] of technology's orientation toward **things** (not necessarily material things) is the frequent resort to nouns as a source from which to form other parts of speech. In the technical jargon, one is more likely to hear "launcher angle" than "launching angle" even when the latter is more appropriate.[2] We find "civilian scientific group" rather than "civil." We read "system synthesis" and wonder whether it means "synthesis for a system," "systematic synthesis," or "systematized synthesis."

The same orientation leads to the vulgar use of plural modifiers (which is a major subject in itself) in such expressions as "Weapons Planning Group" and "games theory," and to such vague expressions as "ethylcellulose inhibiting tape" (does the ethylcellulose inhibit or is it inhibited?).

A special threat to the clearness and precision of our language is the vanishing distinction between modifiers implying possession and those implying quality. It is to present this problem in terms as simple as possible that this paper was written.

Why is this distinction vanishing?

The technical writer did not exist two generations ago. The scientific man was the technical writer of that day; he was a philosopher (witness the literal meaning of his Ph. D.), and as such, had been exposed to a fair-sized (the engineer would say "fair-size") body of good reading matter—enough to make him cautious, but not necessarily expert, with words. Moreover, the demand for the written word was moderate enough that only those who could write tolerably well ever got published and read.

---

[1] The technical man would prefer: "Another language result . . ."
[2] Of course many say "launch angle," by which they doubtless mean "to fish with worms from a boat."

The scientific man of a generation or two ago knew that the great critic John Ruskin had ridiculed that use of "the pathetic fallacy," the attributing of human qualities and emotions to inanimate objects, as in the phrases "the cruel sea" and "the pitiless desert." Such expressions were, in fact, too liberally used by the florid writers of the nineteenth century. But had the scientist—writer of that day been truly expert, he should have recognized Ruskin's indictment as one directed mainly at the more purple passages. Instead, the scientist went to the other extreme. "In the physical sciences," he timidly ruled, "no language shall be used that remotely suggests life's processes or qualities." It became taboo to say "the motor groaned under the load," "the aircraft flew erratically," "the submarine swam at 100 feet," "the telescope is looking at Andromeda." Even today when the intricate concepts of an advanced technology cry out for such usage it is only grudgingly permitted, and even if we do say "the aircraft flew erratically," we do not mean it flew as a wounded bird might fly erratically. We usually mean that the aircraft **steered** erratically, **controlled** erratically, or **responded** erratically to the pilot's efforts to keep it flying.

Possession vs. Qualification

Most unfortunate among the taboos thus adopted by the scientist—writer is the one against use of the possessive for inanimate objects. To him, the phrase "the engine's second cylinder" implied that the engine shared one of mankind's special prerogatives, the right to personal property. Nonsense, of course! No such implication ever existed, although if tolerated, it may become standard.

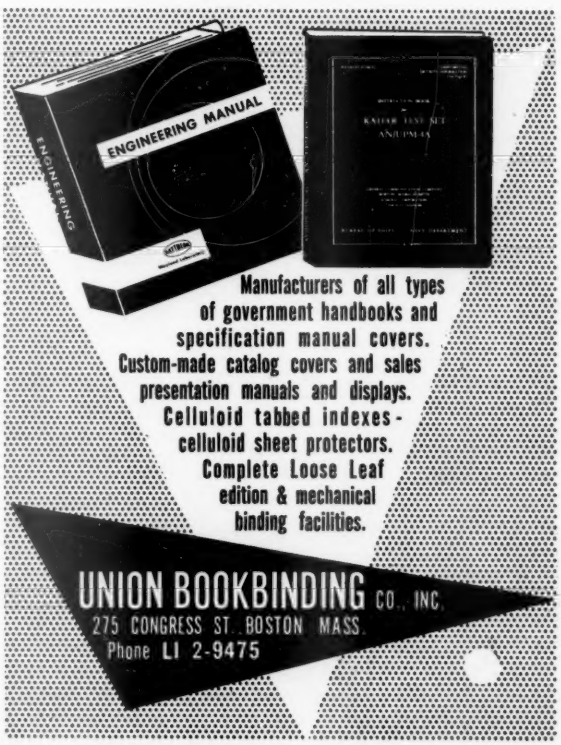
This is a misapprehension consisting of two parts: first, that a possessive implies right to property; second, that it implies animation. Let us demolish these concepts in order.

First, a man says he has eaten a hen's egg and has bought a child's bicycle and a carpenter's vice. He sees a mare's tail in the sky. Now, this man does not imply, nor does he wish to imply, that he has ingested the private property of a hen, nor seen a tail of which a mare is possessed, nor purchased the private property of a child or a carpenter. And if Mrs. Wilson suffers from Bright's disease, it is nevertheless her own disease that affects her—not Dr. Bright's. Possessives then do **not** imply personal property rights.

Second, if we spoke of this book's table of contents, no one could ever suppose that the book is alive. If we mentioned this country's tennis players or a day's work, we would not imply that countries or days are living entities. When we climb Mt. Whitney's eastern slope, we do not expect to feel its chest breathing beneath our feet, nor that Mt. Whitney claims legal possession to its eastern slope. Let us conclude, then, that it is safe enough to use the possessive to indicate inclusion or origin or other loose relationships between one thing and another.

Two other influences lead to the loss of the possessive. First, having been told again and again that he is too wordy, both by stylists and by publishers, the technically trained man grasps at any chance to save words. Instead of "the belt for the fan in the radiator system of the automobile built in Detroit," he chooses "the Detroit automobile radiator system fan belt," and who can wholeheartedly blame him?

Secondly, scarcely one person in ten is ever quite sure how to distinguish possessives from plurals. So the technical man feels unsure if he attempts "the automobile's radiator . . . " for to him it seems to imply more than one car. The same confusion leads to such barbarisms in the commercial and military fields as "Grape Nuts Flakes" and "Commissioned Officers Mess." (They do?)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Before we rashly decide to attempt to restore the possessive case to those expressions where its use is fitting, we must ask whether any purpose is served thereby. Do we increase the usefulness of language? Do we gain in precision of expression?

We do, and not only in such obvious phrases as those that invite puns, for example "the general indecision" for "the general's indecision." Examine the sets of sentences below. The sentences in each set are identical except for the presence of a possessive.

Distinctions

1a. The marten ruthlessly destroyed all the brook's trout and then moved on to the pond. (All the various trout in the brook—as opposed to those in the pond.)

1b. The marten ruthlessly destroyed all the brook trout and then moved on to the pond. (He destroyed one species only. We don't know where. The possessive noun, **brook's**, shows inclusion, origin, or other physical relation. The adjectival noun, **brook**, shows kind or quality. The first answers the question "**which** trout?" The second answers the question "**what kind of trout?**")

2a. Here is the old cow's bell. (Tells you which bell. It may have been a sleigh bell, but it was used by the old cow.)

2b. Here is the old cow bell. (Tells you what kind of bell.)

3a. Robbers entered the bank's vault. (Tells you which vault. It may have been a cold-storage vault, but it belonged to a bank.)

3b. Robbers entered the bank vault. (Tells what kind of vault. It may have belonged to a butcher, but it was a bank vault.

Technical Distinctions

We see, then, how the possessive case does help us gain a distinction in meaning that the noun-derived[3] adjective cannot. But we must still ask whether the distinction can be carried over into the technical field, and whether it will serve any useful purpose there.

4a. Trained engineers plotted the missile's path. (There was one missile, and its path was plotted.)

4b. Trained engineers plotted the missile path. (A path typical of missiles, or intended for missiles, was plotted. Perhaps it was used by a number of missiles, but perhaps by a homing pigeon.)

5a. They tested the radio's tubes. (Tells which tubes.)

5b. They tested the radio tubes. (Tells what kind of tubes.)

6a. The radar's range is 10,000 feet. (Tells the range of specifically which instrument.)

6b. The radar range is 10,000 feet. (Tells the range as determined by what kind of instrument.)

7a. Errors were found in the wing tip installation's design. (They intended to build a whosis into the wing tip, but someone botched the design of the whosis.)

7b. Errors were found in the wing tip's installation design. (Someone botched the plan for installing the wing tip on the airplane.)

7c. Errors were found in the wing tip installation design. (The meaning is uncertain.)

8a. To gain space, workmen cut away some of the tank armor. (How much information can be found here? Someone was working with the type of armor employed to protect tanks, and

(Continued on page 16)

[3] Some grammarians would confuse us by calling these words "attributive nouns." The term is misleading. If words converted from nouns remained nouns, the word **ruby** in the old song, "Who will kiss my ruby lips?" would be a noun, and as such, it would suggest one of the hardest chemical compounds found in nature. Who indeed would kiss such ruby lips? (Actually, if we look a little more closely, we see that the English noun **ruby** is itself derived from an older adjective meaning **red**.) But the fact is, classifying words by part of speech is futile unless functional criteria are used. If **better** is rigidly classified as an adjective, the sentence, "They better their positions," is without a verb. The functional definition of an adjective requires that words modifying nouns be treated as adjectives. Only chaos can result in grammar if nouns are said to modify nouns.

Informative Function of the Scientific Report

By HOLT McALONEY

Director of Public Relations, Ford Instrument Co., Division of Sperry Rand Corp., Long Island City, N. Y.

Technical writing has become a vital profession in our modern, highly technical world. It is obvious to almost everyone that instructions on the use and maintenance of new devices—from lawn mowers to Univacs are necessary. But technical writers have broader functions—they must report technical and scientific progress in books, reports, periodicals, proposals and monographs for the extension of knowledge. The scientific report has become a cornerstone of our modern civilization and must not be treated casually. Let us examine scientific reports and their importance.

Probably the most famous opening line of a scientific report was given verbally in the third century B.C. when the startled citizens of ancient Syracuse saw a naked man running down the street crying, "Eureka—I have it." Although apocryphal, this legend reaches across two thousand years to emphasize the importance of the scientific report in history. The complete information behind Archimedes' cry of "Eureka" was written into a treatise by him entitled, "On floating bodies"—one of nine treatises which have come down to us through the ages, written by this great scientist-philosopher.

Scientific reports had their origin in philosophic writings. Philosophy is the study of the ultimate reality, causes and principles. It generally covers areas where no or few facts are available. Science, on the other hand, is accumulated and systematized learning. From the observation of facts, theories are made and these theories can be proved or verified.

From Philosophy to Science

In early times, when man had accumulated few facts, the inquiring mind philosophized on the nature of things. The transition between the philosophic and the scientific was gradual. However, the data and observed phenomena, with suggestions as to their meaning, had to be recorded and passed on so that mankind could accumulate sufficient material to eventually induce hypotheses and arrive at scientific theories of natural law. Thus the writings of early philosophers were the early scientific reports.

This intertwining of philosophy and science is best seen in Aristotle. In the four decades before 323 B.C. this great man was observing, noting, thinking, teaching and writing on physics, astronomy, biology, psychology, government and ethics. His writings on government and ethics were entirely philosophy. With no instruments to aid his study, his astronomy was speculation. But his "History of Animals" and his book "On the Parts of Animals," showed such a high degree of accurate observation that they can be well studied as scientific report writing.

Recorded Ideas Survive

The impact of this great mind was felt for over a thousand years solely through the clarity and the power of his writing. Let us not fool ourselves that Aristotle's ideas would have lived if they had not been well expressed. It was the recorded ideas, made clear to readers for ages to come, which survived. These writings were studied and taught by the Arabic scholars during the dark ages of European illiteracy. Averroes and other great Arabic scholars kept these works alive, and the rediscovery of Aristotle's writings in Europe literally awakened the minds of men in the 13th century. They not only brought back the tenets of rational thinking as presented by St. Thomas Aquinas—but eventually became the basis of our entire science of biology.

What I am trying to emphasize is the necessity for good writing. If the writing had not been good, the ideas would not have survived. But I am afraid that thousands of scientific reports are being written today which are not informative, because the ideas within them are buried under a mass of words. There is far too little emphasis given to training our scientists in how to express themselves. The ideas which never successfully get out of the heads of their originators, die.

Famous Scientific Reports

Let us look at the impact on the world of some of the famous scientific reports of history. Copernicus, with his "On the Revolution of Heavenly Bodies" in 1543 has been said to have "dethroned man as the center and lord of creation." This treatise shook society and the Church. When Galileo, with his first crude telescope, verified and elaborated the Copernican concept ninety years later and wrote his "Dialogue on the Two Chief Systems," it brought him for trial before the Inquisition. Ideas are powerful things. But they must be expressed to release the power.

Almost as profound in its effect on the world as was Copernicus' concept was Sir Isaac Newton's "Principia" which was published in 1667. It was written with the scholarly ability of the philosopher. Mathematics was given a new dimension; motion and gravity were brought into a new focus. You will note that the world refers to "The Writings of Newton," when it wishes to speak of the ideas of Newton.

The very titles of these early scientific reports emphasize the literary qualities inherent in them. We refer to Archimedes' "Treatises." Galileo wrote a "Dialogue." The great William Harvey, when he discovered the circulation of blood, wrote, in 1628, an essay—"Essay on the Motion of the Heart and the Blood." Most of these early works were in erudite Latin, the language whereby scholars exchanged ideas. And where contemporary language of the period was used, men of outstanding scientific minds had an excellent command of language to work with. The great Benjamin Franklin was one of the most articulate men of his day, and his papers on such subjects as his experiment with his kite in a thunderstorm were clear, readable and interesting.

Examples of Brilliant Writing

Probably the best example of brilliant writing in scientific reports is found in Sir Humphry Davy's work. He was a brilliant chemist and biochemist, and his discoveries are too well known to discuss here. But his writing was superb. He called one of his books (published in 1812) "The Elements of Chemical Philosophy," which shows his kinship in mind to the earlier philosophers. It has been said of Davy, "God meant him to be a poet but the world harnessed his talents to science."

In 1840 a report on a three-year expedition, entitled, "Zoology of the Voyage of the Beagle," was written by young, 31-year-old Charles Darwin. In the next twenty years, Darwin continued his study and writing. In 1859 he wrote what has been considered one of the two most influential books of the 19th century, "The Origin of the Species by Natural Selection." This was a report of his scientific studies and the hypotheses he had drawn. Biologists were immediately divided into camps. Social scientists and historians took a new look. Religious leaders were disturbed. In fact the impact of this book is still with us, and in its wake we have not only advanced in our study of anthropology and other scientific subjects, but we inherited a Scopes trial in the mid-twenties and a Broadway show today. Later scientists have disproved some of Darwin's assumptions; but no one will deny the effect of his book. Its informative function was complete.

We cannot take the time to dwell on example after example. Merely note the importance of a few random selections. Heinrich Hertz's "Electric Waves" in 1890 which was used by Marconi, DeForest and countless others to give us radio, television and radar. Marie Curie's 1902 book on "Radioactive Substances" which was the first step towards a nuclear powered (or destroyed) world. And how wide has been the influence of a simple paper published in 1905 by a 26-year-old mathematician named Albert Einstein. This paper (I choose to call it a scientific report) completely defined the theory of relativity. What better example of "The Informative Function of the Scientific Report"?

Two Objects of Engineering Reports

There is no reason why engineering reports should not be just as clearly written as the broader scientific reports. They both have the same two objects in mind. First, to transfer an idea clearly and logically from the writer's mind to paper. Secondly, to transmit the idea clearly from the paper into a reader's mind. What is important is that the scientific man be able to communicate. Otherwise there will be no information carried in his report.

We are too inclined to ignore the need for such writing. Our engineering schools are turning out too many graduates who do not have the ability to express themselves well. We are handicapping them and the men who work with them by not giving sufficient emphasis to this matter.

In the course of my work I deal daily with several hundred engineers and scientists and I find the articulate ones, those with the ability to write well are rare. And daily we receive and must work with reports, technical manuals, and other such material prepared by other companies and laboratories—and we find many of these are of an extremely low level of quality. Finally, in trying to get people to work for us in our technical writing department, we find capable technical writers extremely hard to locate.

Training in English Needed

Colleges can turn out good writers. Colleges can turn out good scientists. It is a shame that more emphasis is not placed on training scientists to be good writers. Since the main function of a scientific report is to inform, the need for ability to communicate is strong. Too many of our young scientists find themselves talking to themselves alone.

May I make a few suggestions?

First: Make English composition a major course in our Engineering Departments. Poor English should be tolerated no more than poor mathematics.

Second: Technical papers, engineering reports, theses and such writing done by students for their science courses, should be graded with as much emphasis on the English as on the mathematics and science.

Third: A course in the study of great scientific reports, such as those I have mentioned earlier, should be given—almost like the Great Books course given in some colleges. Let us avoid the tabloid-digest business of giving a lecture on the gist of these writings. Let us have the engineers read the full text and learn the clear, orderly and well expressed manner in which it was written.

Fourth: Make public speaking a required course for graduation.

This latter point brings up several additional facets to the scientific report. You will note that repeatedly it is stated that a report was, "from a paper delivered before such-and-such a scientific group." Now I am sure that many of you have sat through these delivered papers. Haltingly read, mumbled, droned, intoned. Poorly organized. Hard to follow.

Speaking Ability Important

Not only must our engineers or scientists be prepared to deliver papers to learned societies—but in today's scheme of things he must be presenting verbal reports to many other groups. He must speak to management in the company or institution with which he is connected to report on progress or achievement.

He must deliver reports to customers—either engineering proposals or summaries of results of studies. He must explain technical matters to groups of laymen—either community groups, or business groups or educational groups.

Not only must he put his ideas down in a logical, orderly manner; he must be able to express them on his feet, in a clear voice. Where does he receive training for that?

In my business—handling the Public Relations of a large research, development and manufacturing company, I find our engineers poorly equipped to do this sort of thing. We are working to correct this, but it requires a great deal of time and effort.

Recently the Navy asked us to present to a group of fifty or sixty an analysis and comparison of analog and digital computer techniques for weapon control systems. This required preparing several talks for the conference. The speeches had to be written clearly. Technicalities were simplified as far as possible. New or unfamiliar terms were defined. Then the engineers selected to give the talks had to be rehearsed so that they spoke with conviction, were easily heard and clearly understood. And they had to be trained how to use visual aids ranging from the blackboard to lantern slides. It is astonishing how few people can use a blackboard correctly!

At another time two of our promising young engineers proved to be so pitiful when they tackled the job of presenting a phase of a study we were making that we had to drop them from the conference and give the task to their department head. They had never been taught how to deliver a scientific report and missed this opportunity.

The Public Relations function, which is my field, is most keenly aware of the need for competent expression. An engineering or scientific organization has but one thing to offer to its customers—capabilities. These capabilities rest within the scientific personnel of the organization. It is by writing or speaking that our engineers must present what we proposed to do, report on our progress, and deliver the final accomplishments.

Getting Attention for Technical Work

The function of the scientific report is informative. And without the scientific report, the theory and laboratory work is lost.

A young boy, trying to train a mule, had been told to use kindness. But he got nowhere with his training. He took the mule to the man who had sold it to him and asked for advice. The man picked up a big two-by-four, hit the mule a terrible blow over the head and then proceeded to lead him gently about. The mule was docile and responsive. The boy said, "I thought you should use kindness in training him." "True," said the farmer, "but first you must get his attention."

The written or spoken report is the only way a brilliant scientist can get the attention of the rest of the world. Without these reports, scientific progress cannot be made.

I am not proposing that we slight any of our scientific training in engineering. But I am suggesting that engineers be taught some way to "get attention" for scientific work.

(Continued from page 12)

needed more space; he had the workmen cut part of the armor away. But add a possessive at the cost of two taps of the typewriter, and we greatly increase our information.)

8b. To gain space, workmen cut away some of the tank's armor. (Ah! Now we know what was being worked upon—the tank itself—and we can reasonably infer that the space was needed in the tank.)

9a. (This refers to small pivoted airfoils, or planes, inserted in the large after-fins of a rocket.) The rocket planes were damaged on the third test. (Buck Rogers rides again!)

9b. The rocket's planes were damaged on the third test.

Examples from Recent Reports

Here are examples from recent reports; sometimes the trend is carried a step beyond inadequacy toward incomprehensibility.

10a. The gimbal moment of inertia must be considered. (The author was speaking of a specific gimbal; he meant:)

10b. The gimbal's moment of inertia . . .

11a. The carriage natural frequency. (He was discussing several specific carriages.)

11b. The carriages' natural frequency.

12a. The most important input is the aircraft true air speed.

12b. The most important input is the aircraft's true air speed.

13a. (A step in relating the coordinate system of a camera to a general coordinate system.) Rotate the camera coordinate system about the camera x-axis and through the angle delta.

13b. Rotate the camera's coordinate system about the camera's x-axis and through the angle delta.

14a. (A discussion of the positions assumed by the movable pip of a computing gunsight.) The pip former position had been carefully noted.

Here, the meaning is neither utterly obscure, nor utterly clear. There is a slight semantic difference between:

14b. The pip's former position,
and
14c. The former pip position.

Certainly either is more acceptable than 14a.

The errors illustrated in 13a and 14a and at the very beginning of this article are no different in kind from those we have been studying throughout the article. They are merely set in contexts that make them more offensive to the ear.

If we continue to equate

the tank armor	with	the tank's armor,

we can expect eventually to read

the tank outer armor	for	the tank's outer armor
the ocean farther shore	for	the ocean's farther shore
the pot metal bottom	for	the pot's metal bottom

(Continued on page 20)

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JOHN WILEY & SONS, Inc., 440 Fourth Avenue New York 16, N. Y.

How To Produce Better Looking Reports

By JOHN FALLON
Sanders Associates, Inc.
Nashua, New Hampshire

"Just once," a technical writer said to me recently, "I'd like to be able to turn out a good looking report. Sure, my stuff reads well and conveys the intelligence it's supposed to; it contains all the raw materials for a good job; but when the Contract Administrator says, 'Get it out fast,' and the Accounting Department says, 'Get it out cheap,' I have no choice but to make it 'quick and dirty.' It's like using teakwood to build an outhouse."

This problem exists to a certain extent in any engineering firm which agrees by contract to provide a customer with periodic reports of technical progress. Where there are deadlines to meet and budgets to adhere to, there is a strong temptation to skimp on the quality of the technical report.

This is understandable when you consider that the primary function of a technical report is to transmit intelligence. If it achieves this end without violating any of the standards established by the customer, it serves its purpose in the eyes of the contractor. Yet the appearance of a report cannot be ignored, or discounted as mere "frosting on the cake." A company can develop considerable prestige by publishing reports that are appealing in their presentation as well as clear, concise and complete in their content. This fact was emphasized to me recently when the Publications Director of a large electronics firm said, "I am confident that the time we have spent in dressing up our publications has been paid for many times over by the new business it has brought in."

Actually the time invested need amount to very little. Furthermore, an attractive presentation does not have to be costly. This I learned recently when appraising our reports and organizing a program to remedy their aesthetic deficiencies. At Sanders Associates, Inc., we, like many other engineering organizations, have our own Publications Department, consisting of a writing staff plus photo, art and printing facilities, in which we handle a report from design to delivery.

Initial Steps

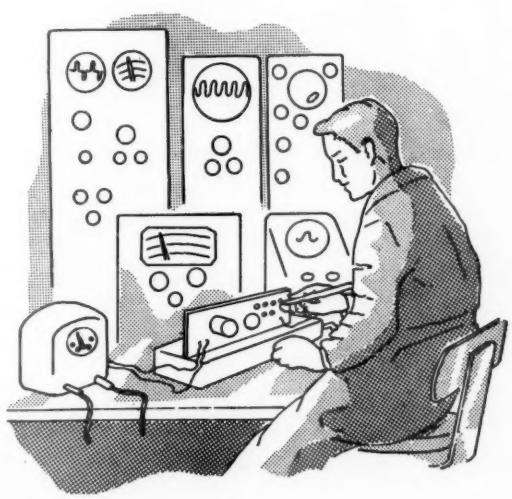
Responsibility for the fulfillment of all written requirements of a contract is assigned, by our Publications Chief, to a writer. This writer examines the contract to determine what he must do, then studies all applicable specifications to determine how he must do it. He obtains textual material from engineers, either as rough notes or through interviews, transcribes it and returns his typewritten first draft to the engineers for technical approval. Drawings and photographs, once agreed upon by him and the appropriate engineer, are prepared at his request and subject to his approval. The finished "package," after editorial review, is submitted to the Project Engineer for final approval prior to printing.

Although the organization of our department may differ from that of many engineering firms, the principles we have established for improving the appearance of our products are generally applicable to any technical publications facility, whether it does its own work or farms it out. Several of these principles are discussed below.

Importance of Covers

The first impression of a report comes from its cover. In looking through our library's files, I observed that, with few interesting and commendable exceptions, the covers on technical reports are pretty unstylized. A few incorporate a reasonably pleasing and appropriate design, but even these are rarely appealing enough to make a customer **want** to read one report in preference to another.

On examining the few good covers I came across, one fact was obvious: our artists can do as well. Furthermore, they can do it quickly. Our artists have, therefore, designed new covers for reports submitted under all our major programs which have at least three more reporting periods to run. Total expended time for both writer and artist has averaged about two man-days, and by pre-printing the new covers, we have been able to spread the ex-



pense over the number of reporting periods on which the design will be used. As a result, the cost per reporting period is negligible.

In many instances we have used the same technique on front matter and chapter lead sheets, incorporating a design in the Table of Contents and List of Illustrations and in the first page of our reports' major subdivisions. Because we type our text on paper masters for direct multilith offset reproduction, this has involved an extra step, namely making a metal master for the new design. But since the basic design will not change from report to report, we are again able to pre-print and stock-pile these sheets. Where text is to appear on these pages, we simply run the pre-printed sheets through our press; where no additional copy is needed, we insert the pre-printed pages in their proper place when collating. As with the covers, the time required is small and the expense per reporting period is negligible.

Use of Color

A second color throughout a report not only spruces up its appearance, but also helps the reader by tying together the various parts of the report. Just a "splash" every once in a while is all that is needed, so we have incorporated color in the new design of our covers, front matter and lead sheets. Because our press is small, there is some inconvenience involved in setting up for a second color; because our printer is usually busy running off black-and-white material, his production schedule is pretty tight. But he does, nevertheless, have color in his press a few times each month, and we wait until these times to pre-print our color work.

Margins and Spacing

Probably no feature of a publication contributes more to an overall impression of professional quality than justified right-hand margins. Unfortunately, either expensive equipment or, using standard equipment, a prohibitive amount of time is needed to effect this alignment. Few firms, however, take the trouble to justify their text, so ours do not suffer by comparison. Still, by being a little more deliberate about her work, dividing and hyphenating words as necessary, our typist has been able to smooth out considerably the ragged right-hand edge of her text.

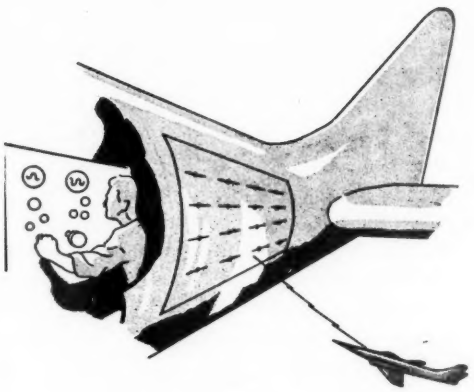
Single-spaced copy with double spaces between paragraphs looks better and reads more smoothly than loose double-spaced text. In addition, it is more economical, since it almost halves the number of masters used when the text is double-spaced. The only problem involved is in making erasures, because the typist is morely likely to erase adjacent letters, but a little extra care is all that is necessary: by masking off the portion of the text to be erased with a sheet or two of paper or with an erasing template, our typist rarely spends much time in making corrections.

Uniformity of Paper and Printing

It goes without saying that a publication which includes several printing processes and types of paper looks pitifully amateurish, as though it had been thrown together from a dozen different directions. If a pre-printed piece, such as an intra-department memo on a theoretical investigation, is to be included in a report, it is usually incorporated as an appendix. This makes it convenient, where an adequate number of copies of the memo are already on file, simply to bind it in a report. But convenient as this is, it is worth the extra hour or two to retype and reprint it when its original version has been reproduced by a different method than is to be used in the rest of the report.

Sometimes where two or more reports are under way concurrently and only a limited number of typewriters are available with a given typeface, it may be a temptation to use a second typeface in a report. This is neither desirable nor necessary. If a report cannot be held up until the typeface used in previous editions is available, then at least the typeface can be maintained consistently throughout the pages of the current issue by having all its text prepared on the same kind of machine.

The only instance where we consider it justifiable to use a second kind of paper stock is on foldout drawings that are too large to be reproduced on our press. When there is a rush, we use our Bruning machine; when the schedule allows enough time, we have the job done offset by an outside firm. By doing our oversize drawings first, we have them printed and ready for binding before the rest of the report has been printed, and the cost of the outside printing is usually little, if any more, when you consider that we must trim and fold by hand.



Sub-Paragraphing

Most technical reports contain too many sub-paragraphs. This gives them a loose strung-out appearance and also, by continually interrupting the reader's train of thought, makes them difficult to read. True, these sub-paragraphs are sometimes required by the specification to which a report must be written, and they do have a certain functional value in that they enable a writer to pin-point a reference with extreme accuracy. Where they are not required, however, they should be held to a minimum. The few extra seconds required in locating a reference by major rather than minor paragraph is more than offset by the improved appearance and better readability. We now use a maximum of only one major paragraph heading and two minor ones. Major headings are assigned Arabic numerals in sequence, each section of the report beginning a new series; first sub-paragraphs are assigned small letters followed by a period; second sub-paragraphs are assigned Arabic numerals in parentheses.

Headings Relieve Monotony

One of the outstanding shortcomings of technical reports is monotony. Admittedly you can't make scientific data read like an adventure story, but you can help to spice the sameness of content by inserting an occasional variation in appearance.

The bold-face section headings already mentioned help considerably to relieve monotony. Doing the same thing with paragraph headings would help even more, but unless you have a typewriter which enables you to shift your size and/or style of type with practically no inconvenience, you must set these headings by hand, letter by letter. This not only takes time, but also requires metal masters for reproduction.

We have compromised with the limitations of cost and convenience by restricting our paragraphs on a given topic to three, with a major heading in caps and two minor upper-and-lower case headings. All headings, both major and minor, are underlined. Major headings are typed flush with the left-hand margin; primary sub-headings are indented four spaces, with the copy beginning underneath, and indented eight spaces from the left-hand margin; secondary sub-headings are indented eight spaces, followed by a period and a dash, with the text beginning on the same line.

Two-Sided Printing

Printing on only one side of your pages has two advantages: it is faster for the printer; it makes the finished product appear to contain more than it actually does. In practice the latter is seldom a real advantage because it applies only to those people who see but do not actually read the reports, and they do not award contracts. Besides, it looks like what it is: a job in which you took the easy way out.

Granted, though, it is faster for the printer if you print on only one side of your pages; not easier, mind you, but faster. And not even faster if by faster you mean he can spend fewer man-hours doing it. A one-sided job can be printed faster from start to finish than a two-sided job because on the latter, pages must be allowed to dry overnight. But since virtually all of our reports run over into a second and sometimes a third day, we let one side dry overnight and print the second side the following day.

Uniform Printing Area

Did you ever flip through a finished report to check the page numbers? Notice how they often jump around, up and down and from side to side? When page numbers are not in the same spot on every page, it usually means that the copy isn't either. This makes both printing and reading more difficult, and also mars the report's appearance.

With regard to text, it's just as easy as not for a typist to position her work uniformly. But she must be told! So examine your requirements: Do you need room for a classification at the top and bottom of each page? Will the page in question be bound on its left or right edge? Where will the page number appear? Then outline your copy area for your typist, with a non-reproducible pencil if paper masters are to be used, with a blue pencil if the copy is to be photographed and printed using a metal master.

Establishing fixed dimensions for all types of illustrations would take so much time and trouble that it would not pay off except where volume is great and aesthetic standards high. Just remember that there are three ways in which an illustration can be incorporated in a report: in a reduced form on the page with text; full-page size immediately following the first reference to it in text; and in a separate section, usually at the end of the report, with all other illustrations. The first method is, of course, the most desirable from the standpoint of

appearance, but it takes more time because each illustration must be reduced to a specified dimension, text must be typed with spaces left for illustrations and double printing is necessary on a page where text is printed with paper masters and illustrations with metal masters. Added time is minimized, however, when the writer confers early enough with the artist to lay out a report properly.

We are striving to achieve the ideal format: illustrations integrated with text wherever possible and appropriate. More often than not we are unable to do this because time limitations make it impractical, but little by little, better planning is enabling us to come closer to our goal.

Engineering Symbols

Few typewriters contain keys for all the engineering symbols used in technical reports. Some are equipped with replaceable keys, but where there are a great many symbols, the interchanging of keys increases typing time considerably. If you do not have a machine which enables a typist to switch type fonts quickly and conveniently, you must resort to one of two methods for inserting your engineering symbols: either paste them up by hand and print with metal masters, or draw them on your paper masters with a reproducible pencil. The former is prohibitively time-consuming; the latter, though convenient, can look sloppy unless your artist is careful to draw your symbols with a consistent size and shape. By letting one artist specialize in this type of work, we have managed to achieve a reasonably neat and uniform presentation.

Old Versus New Material

When a contract requires the periodic submission of reports, certain material usually appears unchanged in each. Examples of this are historical background of the program, brief descriptions of the major components and biographical resumes of participating personnel. By distinguishing between new material and that which has been printed previously, you can enhance the orderliness of a report and at the same time do the busy reader a favor by allowing him to read only what he considers necessary.

Two ways to make a clear distinction between old and new material are by using different colors and by using different typefaces. In the former, for example, you might print new material in red and old in black. This means, of course, that two masters must be used on each page that contains both red and black printing, and the typist must be careful when positioning her copy on her masters. After doing it a few times, however, our typist is now able to prepare a two-color page almost as fast as a single color one. Her task is made easier by our writers who indicate clearly on their final drafts which portions of their reports should be red and which black. The only extra expense of any size is in printing, since the number of masters can be almost doubled and the press must be set up for a second color.

Using different typefaces for old and new material can be done with a flick of the finger if a machine, such as the Vari-typer, is available which offers a variety of conveniently changeable typefonts. In addition to being easy, this method is also fast and economical, because only one color and half the number of masters are required.

A distinction between old and new material can also be achieved even where only conventional typewriters are available, providing two of these typewriters have clearly different styles, but again considerable care must be exercised by the typist. Furthermore, this method has one major disadvantage: when inserting a partly typed paper master in the second typewriter, it is very easy to smudge the type.

Careful Preparation Pays Dividends

These, then, are a few ways in which you can make your technical reports look better. Unless your department is exceptional—yea, almost unique—your products can do with some sprucing up, and, contradictory as it seems, you can accomplish this with very little more time and expense. Planning is the keynote. Examine your publications and itemize their aesthetic deficiencies. Then attack each one separately: drabness, monotony, confusion. The time you'll spend will pay dividends, not only in new business, but also in personal satisfaction for you and for everyone who contributes to the publication of your technical reports.

(Continued from page 16)

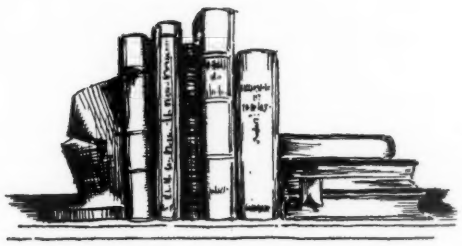
the heart broken cell structure for the heart's broken cell structure

the man eating habits for the man's eating habits

the original mystfying loss for the original's mystifying loss

Conclusion

We have seen that the possessive does serve where the noun-derived adjective does not and that it supplies a distinction needed both by standard English and by the technical field of English. We have seen that continued neglect of the distinction is an invitation to an even more barbarous and ambiguous usage when more than one modifier is needed. What we must do is grasp the editor('s) red crayon firmly, scrutinize each noun('s) modifier vigilantly, and insert an apostrophe and an "s" wherever they add to the accuracy, clarity, and elegance of the engineer('s) labored prose.



BOOK REVIEW

THE TELEVISION COMMERCIAL. Harry Wayne McMahan. Revised and enlarged edition. 223 pages. New York: Hastings House. $6.50.

The myriad of considerations leading to the completion of a successful television commercial are not evident to most people. Each of them is taken up here and carefully explained; in most cases, examples are given.

In addition to the descriptive admonishments, 170 illustrations illustrate not only many successful TV commercial approaches, but also serve to show many instances of what not to do—and why.

Harry Wayne McMahan was formerly head of TV Commercial Production for McCann-Erickson, Inc., and now is a consultant on television commercials. The first edition of his book has become the outstanding reference in the field. The present edition includes approximately 25 per cent more material than the original.

In addition to writing and production responsibilities and techniques, he goes into viewer psychology, good taste, research, testing, and budgets.

Special chapters cover station break spots, commercial scripts, singing jingles; animation, live action, stop motion, puppets, photo-animation, sound tracks, and other production techniques.

Mr. McMahan has something to say; he says it authoritatively and in an easy-to-read style.

R. M. Stern

AN AD MAN AD-LIBS ON TV. Bob Foreman. 173 pages. New York: Hastings House (1957). $4.50.

Sixty-three pieces which originally appeared in Sponsor magazine are bound between these covers, each with a pithy comment of the "on-second-reading" variety added by the author. From 9 to 5 (or later), Bob Foreman is Vice-President in charge of Television and Radio at Batten, Barton, Durstine, and Osborne advertising agency in New York.

For this book, however, he has created the madly fictitious agency of Snook, Crappie, and Bream, Inc., Madison Avenue, New York City.

Writing ever humorously and never pedantically the author, without using the how-to-be-successful-in-eight-easy-lessons approach, has managed to include hundreds of invaluable gems of information and advice based on his 18 years in the advertising business and his experience with TV since it was in swaddling clothes.

He divides his commentary into eight major parts: The Agency and Its Denizens; Nuts, Bolts, Commercials; The Audience, Confound 'em; Sponsors, the Care and Feeding of; The Fine Art of Video; Research—If You Can Call It That; The One Without Pictures—Radio; Color or Hue, Whew!

Almost any phase of the TV business you can name has been treated (or, sometimes, mistreated), everything from ratings to program techniques, from time-buying to commercial approaches—even the legal aspects are covered. Writers and copy come in for a goodly share of the words that flow from his pen.

R. M. Stern

HAWLEY'S TECHNICAL SPELLER, G. G. and A. W. Hawley, Reinhold Publishing Corporation, New York, 1955, 146 pages, $2.95.—B. E. Sweet.

Uses: Hawley's Technical Speller is a boon to the busy technical writer. Although this book does not contain the dictionary's complete etymologies, synonymies, and vocabulary entries, it can be used as a convenient supplement to the desk dictionary.

General Coverage: 8,000 difficult words and many nontechnical words used in everyday correspondence are listed alphabetically. There is more than adequate coverage of spelling, recommended word divisions, correct usage of misapplied prepositions, capitalization of trademarks and proper names, hyphenation, and distinction between single and compound words.

Spelling: The spelling is that preferred by Webster's New International Dictionary, and by the American Chemical Society. Confused meanings or spellings are clearly explained by footnotes. The difference between "counsel" (advice, or an attorney) and "council" (a meeting) is immediately detected.

Syllabication: Syllabication is also in accordance with Webster. Ideally, words should not be divided. The practical compromise is division of the word as near the middle as possible. A good example is the division of "amplifi-cation." This achieves greater

balance and readability. When more important considerations are involved, complete consistency is not possible nor even desirable.

Prepositions: A helpful listing of misapplied prepositions is given. The meaning of a preposition often varies with the sense in which the word is used. "Application of . . . to" are excellent examples of prepositions used in the technical sense.

Capitalization: Capitalization includes names of manufacturers, for instance "Solvay," and officially designated trademarks such as "Glyptal." When copyrights lapse on trademarks, words like "saran" enter the language, and are not capitalized. The status of such names sometimes changes overnight; Webster, therefore, cannot always be relied upon.

Hyphenation: The hyphen serves many purposes. When it occurs within a word, it must be retained as part of the spelling. This includes compound adjectives, which occur so frequently in technical writing; for example, "high-temperature," "corrosion-resistant," and "cold-drawn." The prefixes "non," "semi," "un," and "inter" are not hyphenated. A hyphen following a word indicates that it is merely a standard prefix which cannot stand alone. Examples are "chloro-," and "tetra-." When these are used as combining units for longer words, the hyphen should be dropped as in "tetraploid," or "tetrachloride."

Single or Compound Word: Frequently, the question arises whether a word is written as one or two words. A numeral in parenthesis after an entry answers the question unmistakably. For example "soybean (1)," or "soda ash (2)."

Limitations and Uses: Again, this book has its limitations. It contains neither definitions nor pronunciations, but for fast, easy reference it serves the technical writer's purposes as a source of spelling and word usage. **B. E. Sweet.**

CREATIVE COMMUNICATION, E. L. Cady, Reinhold Publishing Corporation, New York 1957, 158 pages.

In an enthusiastic treatment of a much-discussed subject Edwin Laird Cady brings to light his forty years' experience in the audio-visual field. "CREATIVE COMMUNICATION" is an endeavor to which the author has devoted hard work to put over modern communicating techniques and practical, down-to-earth advice for the ambitious go-getter in the industrial field.

The book is divided into nine major topics: The Growing Need to Communicate, Your Enemy—the Three-Tailed Cat, Cash All Opportunities, Plan Your Communications, What's the Story, What Your Receivers Want, Most Stories Sell Themselves, Hints on How to Work, and Hints About Writing. Self-development exercises are at the end of each chapter, including written assignments for the student slant.

"Hints on How to Work" is the most practical, thought-provoking chapter in the book. Different methods of organizing communication ideas on paper are discussed at some length.

The book is easily read, with captions in bold type for stand-out purposes. However, "easy" reading does not necessarily mean easy understanding. In an effort to dispense slang at a fast clip (no doubt to attract readers of technical manuals who are fed up with dull reading) the writer leaves a bewildering impression of unfamiliar jargon. For example, (pgs. 20-21) "Restate the 'no cat has two tails' more correctly as 'there is no cat with two tails' and you will (1) destroy the cat-ism and (2) demonstrate that the statement which uses the fewest words does not necessarily convey the clearest meaning."

It is obvious that Mr. Cady knows what he is talking about, but his "plan of attack" is not clearly conveyed to his readers. The "pot-o'-gold" objective of the book is always in sight, (i. e., better job, more prestige, greater self-confidence) but the path to the pot is so plagued with the "isms" and the "cats" that it is doubtful if the reader of CREATIVE COMMUNICATION will ever feel the gold.

Anne Gregory

TRANSISTOR CIRCUITS AND APPLICATIONS. John M. Carroll. 292 pages. New York: McGraw-Hill Book Co. (1957). $7.50.

A compilation of 106 feature articles that appeared in Electronics magazine between 1950 and 1956, covering the fundamentals, techniques, circuitry, and equipment used with transistors.

Because the transistor art is relatively new, these articles are not condensed, as in some other compilations; they are reprinted in full in their original form.

Chapter headings include: Principles of Circuit Design; Design of Transistor Amplifiers; Oscillators; Pulse Circuits; Broadcast and Home-Entertainment Applications; Military and Communications Equipment; Computers and Servomechanisms; and Industrial, Scientific, and Medical Devices. **R. M. Stern**

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SOCIETY OF TECHNICAL WRITERS & EDITORS NATIONAL CONVENTION!

Statler Hotel, New York, November 13, 14, 15, 1957

THEME: "FRONTIERS OF TECHNICAL WRITING"

By PAUL LANG—Carrier Corporation

"The Technical Writer in the World of Science Today and Tomorrow" and "Frontiers of Individual Professional Development" are the keynote subjects selected to set the tone and pace of this year's convention. Dr. C. C. Furnes, chancellor of the University of Buffalo; W. W. Bender, vice-president and general manager, Research Institute for Advanced Study, Ruxton, Maryland; and Dr. Dwight E. Gray, National Science Foundation, will present the keynote subjects.

Convention Program (Tentative)

One hundred prominent professional people, embracing a vast area of professional experience and training, have been scheduled for the lecture and workshop sessions of this year's convention. This body of knowledge is comprised of key personnel from the fields of Education, Government and Industry.

In keeping with the "frontier" theme, the convention program is pioneering a highly desired feature: Concurrent alpha through epsilon, panel-workshop sessions designed to concentrate on practical solutions to "maladies" encountered by the technical writer.

Each panel-workshop will consist of a moderator and at least three panel members whose professional reputation, in relation to the particular workshop subject, is widely recognized. Audience participation is an inherent requirement.

Wednesday A.M., November 13, 1957

President of TWE, Richard Frehsee; and President of STW, Robert Schintzler, will briefly extend a welcome to the convention participants. The keynote subjects will then be presented.

Wednesday P.M.—Concurrent Lectures

Alpha: "Pioneering Improved Communication Techniques."

Beta: "Modern Illustrating and Production."

Thursday A.M.—Concurrent Lectures

Alpha: "Current Trends in Handbooks, Manuals and Other Instructional Literature."

Beta: "Today's Technical Reports and Other Informational Literature."

Thursday P.M.—Concurrent Workshops

Alpha: "How the Technical Editor Can Increase the Effectiveness of Scientists and Engineers."

Beta: "Illustrations."

Gamma: "Technical Manuals: The New Weapon Concept."

Delta: "Administration."

Epsilon: "Communicating Technical Information to Laymen."

Friday A.M.—Concurrent Lectures

Alpha: "New Concepts in Training and Professional Developments."

Beta: "The Newer Frontiers in Technical Communications."

Friday P.M.—Concurrent Workshops

Alpha: "Training Technical Writers"

Beta: "The Technical Editor and Documentation."

Gamma: "Preparation of Technical Articles for Magazines and Professional Society Journals."

Delta: "Technical Motion Pictures."

Epsilon: "Production Methods: The Graphic Arts."

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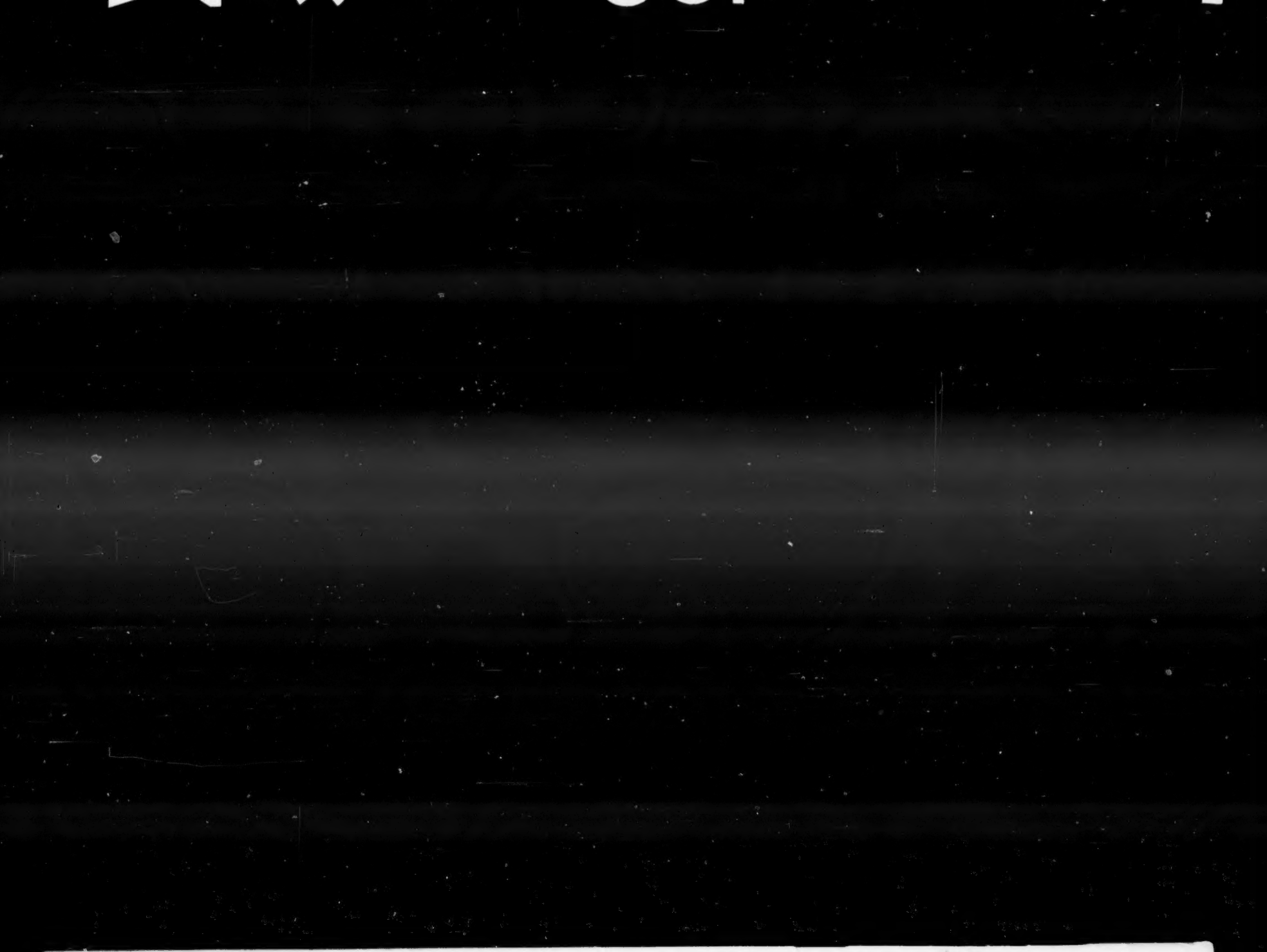
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